

CLAIMS

What is claimed is:

1. A display apparatus connected with an external storage medium disposed external to the display apparatus, the apparatus comprising:
  - a receiving processor that receives a video signal and/or an audio signal;
  - a controller that, if a user requires storage of the received video signal and/or audio signal, stores in real time the video signal and/or audio signal received through the receiving processor in the external storage medium, and, if the user requires reproduction of the video signal and/or audio signal stored on the external storage medium, reproduces the stored video signal and/or audio signal stored on the external storage medium; and
  - an output unit that outputs the reproduced video signal and/or audio signal.
2. The display apparatus of claim 1, wherein the controller, according to a request from the user and when the received video signal and/or audio signal are stored on the external storage medium, determines whether the received video signal and/or audio signal is to be output through the output unit.
3. The display apparatus of claim 1, wherein the receiving processor receives a broadcasting signal including the video signal and/or the audio signal, or the video signal and/or an audio signal provided from an external audio/video (AV) device.
4. The display apparatus of claim 3, wherein, when the received video signal and/or audio signal is output in real time using the output unit, the controller controls the storage or reproduction with respect to the external storage medium.
5. The display apparatus of claim 4, wherein, when the video signal and/or audio signal are reproduced from the external storage medium, the controller displays the reproduced video signal and the received video signal output in real time together on the output unit in a Picture-In-Picture format or in a Picture-By-Picture format.

6. The display apparatus of claim 1, wherein if an input of the user requires control of the external storage medium, the controller outputs management information through the output unit, and uses the management information to manage the storage or reproduction of the received video signal and/or audio signal with respect to the external storage.

7. The display apparatus of claim 6, wherein the output unit comprises:  
a display unit to display the received video signal and the video signal reproduced from the external storage medium; and  
a speaker to output the received audio signal and/or the audio signal reproduced from the external storage medium.

8. The display apparatus of claim 7, wherein the management information for stored video signal and/or the audio signal stored on the external storage medium is displayed in an on-screen display format on the display unit.

9. The display apparatus of claim 7, wherein the management information for stored video signal and/or the audio signal stored on the external storage medium is output as an audio signal through the speaker.

10. The display apparatus of claim 8, wherein the management information comprises time information corresponding to a storage capacity of the external storage medium, and a list including the stored video signal and/or audio signal and additional video signals and/or audio signals stored on the external storage medium.

11. The display apparatus of claim 8, wherein the reproduced video signal and/or the audio signal are a selected video signal and/or an audio signal selected from a plurality of reproducible video signals and/or audio signals stored on the external storage medium and which is selected by a user with reference to the management information.

12. The display apparatus of claim 1, wherein when an input of the user requires control of the external storage medium, the controller outputs through the output unit information that the user can input as a storage request or a reproduction request.

13. A display apparatus connected with an external storage medium, the apparatus comprising:

a receiving processor to receive a video signal and/or an audio signal;

a controller that

forms a virtual file system for the external storage medium,

if a user requires storage of the received video signal and/or audio signal, stores the video signal and/or audio signal received through the receiving processor in the external storage medium in real time with reference to information generated on the basis of the formed virtual file system, and

if the user requires reproduction of the video signal and/or audio signal stored on the external storage medium, reproduces the stored video signal and/or an audio signal from the external storage medium with reference to the information generated on the basis of the virtual file system; and

an output unit, to output the reproduced video signal and/or audio signal.

14. The display apparatus of claim 13, wherein the controller downloads a file system stored on the external storage medium and uses the downloaded file system to form the virtual file system.

15. The display apparatus of claim 13, wherein the controller controls the storage or the reproduction to output the video signal and/or audio signal received through the receiving processor to the output unit in real time.

16. The display apparatus of claim 13, wherein the information generated on the basis of the virtual file system comprises management information for the external storage medium.

17. The display apparatus of claim 16, wherein the management information comprises time information corresponding to a storage capacity of the external storage medium, and a list including the stored video signal and/or the audio signal and additional video and/or audio signals stored on the external storage medium.

18. The display apparatus of claim 17, wherein the controller generates the management information so that the management information is output in an on-screen display format through the output unit.

19. The display apparatus of claim 13, wherein, when the video signal and/or the audio signal are reproduced from the external storage medium, the controller displays the video signal reproduced from the external storage medium and the received video signal together using the output unit in a Picture-In-Picture format or in a Picture-By-Picture format.

20. A display apparatus connected with an external storage medium, the apparatus comprising:

a receiving processor that receives a video signal and/or an audio signal;

a compression and decompression unit that

if a user requires storing of the received video signal and/or audio signal, is set to a compression mode, and compresses the video signal and/or the audio signal received from the receiving processor, and

if the user requires reproduction of the video signal and/or audio signal stored on the external storage medium, is set to a decompression mode, and restores the video signal and/or the audio signal received from an external storage medium;

an output unit to output the reproduced video signal and/or audio signal; and

a controller that

if the user requires the storage, controls the compression and decompression unit in the compression mode and stores the compressed video signal and/or audio signal compressed by the compression and decompression unit in the external storage medium in real time, and

if the user requires the reproduction, outputs the video signal and/or audio signal from the external storage medium to the output unit through the compression and decompression unit.

21. The display apparatus of claim 20, wherein the controller forms a virtual file system for the external storage medium, and controls the storage or reproduction of the video and/or audio signals with respect to the external storage medium using the virtual file system.

22. The display apparatus of claim 21, wherein the controller downloads a file system stored on the external storage medium and forms the virtual file system using the downloaded file system.

23. The display apparatus of claim 21, wherein the controller forms the virtual file system if an input of the user requires control of the external storage medium.

24. The display apparatus of claim 20, wherein the controller generates management information for managing the stored video signal and/or the audio signal on the external storage medium using the virtual file system, and outputs the management information to the output unit.

25. The display apparatus of claim 24, wherein the controller generates the management information so that the management information is displayed in an on-screen display format on the output unit.

26. The display apparatus of claim 24, wherein the management information comprises time information corresponding to a storage capacity of the external storage medium, and a list including the stored video signal and/or audio signal and additional video and/or audio signals stored on the external storage medium.

27. The display apparatus of claim 20, wherein, when the received video signal and audio signal are output through the output unit in real time, the controller controls the storage or reproduction of the received video signal and/or the audio signal with respect to the external storage medium.

28. The display apparatus of claim 27, wherein, when the video signal and/or the audio signal are reproduced from the external storage medium, the controller displays the video signal restored from the compression and decompression unit and the received video signal together on the output unit in a Picture-In-Picture format or in a Picture-By-Picture format.

29. The display apparatus of claim 20, wherein, according to a request of the user and when the received video signal and/or audio signal are stored on the external storage medium, the controller determines whether the received video signal and/or audio signal is to be output using the output unit.

30. A method of operating a display apparatus connected with an external storage medium disposed external to the display apparatus, the method comprising:

receiving a video signal and/or an audio signal in the display apparatus;

storing the received video signal and/or audio signal on the external storage medium in real time, if a user requires storage of the received video signal and/or audio signal; and

reading and reproducing the stored video signal and/or audio signal from the external storage medium, if the user requires reproduction of the video signal and/or audio signal stored on the external storage medium.

31. The method of claim 30, further comprising:

forming a virtual file system for the external storage medium;

generating management information for the external storage medium using the virtual file system; and

providing the generated management information to the user before the user requires the storage or the reproduction of the received video signal and/or audio signal.

32. The method of claim 31, wherein the forming the virtual file system is performed if an input of the user requires control of the external storage medium by the display apparatus.

33. The method of claim 32, wherein the virtual file system is formed by downloading a file system stored on the external storage medium to the display apparatus, and forming the virtual file system using the downloaded file system.

34. The method of claim 31, further comprising outputting the management information in an on-screen display format.

35. The method of claim 34, wherein the reading and reproducing comprises receiving a user selection indicating that the user requires reproduction of one video signal and/or audio signal selected from among a plurality of reproducible video signals and/or audio signals stored on the external storage medium with reference to the management information output in the on-screen display format.

36. The method of claim 31, wherein the management information comprises time information corresponding to a storage capacity of the external storage medium, and a list including the received video signal and/or audio signal and additional video signal and/or audio signals stored on the external storage medium.

37. The method of claim 30, wherein further comprising outputting the received video signal and/or audio signal in real time through the display apparatus during the storing and/or reading and reproducing the received video and/or audio signals with respect to the external storage medium.

38. The method of claim 37, wherein the reproduction is performed so that the received video signal being output in real time and the video signal reproduced from the external storage medium are displayed together in a Picture-In-Picture format or in a Picture-By-Picture format.

39. The method of claim 30, wherein, according to a request from the user and when the received video signal and/or the audio signal are stored, it is determined whether the received video signal and/or audio signal is to be output through the display unit.

40. The method of claim 31, wherein the providing the generated management information comprising providing information required by the user for use by the user in controlling the external storage medium.

41. A method of operating a display apparatus connected with an external storage medium disposed external to the display apparatus, the method comprising:  
receiving a video signal and/or audio signal at the display apparatus;  
compressing the received video signal and/or the audio signal, if a user requires storage of the received video signal and/or the audio signal;

storing the compressed video signal and/or audio signal in the external storage medium in real time; and

restoring the stored and/or compressed video and/or audio signal stored on the external storage medium, when the user requires reproduction of the video signal and/or audio signal using the display apparatus; and

outputting the restored video signal and/or audio signal using the display apparatus.

42. The method of claim 41, further comprising:

forming a virtual file system for the external storage medium; and

outputting management information for the external storage medium generated on the basis of the virtual file system, before the compression or the restoration is performed.

43. The method of claim 42, wherein the storing or the restoring the compressed video and/or audio signal comprises the user requiring the storage or the reproduction of the compressed video and/or audio signal with reference to the output management information.

44. The method of claim 42, wherein the forming the virtual file system is performed if an input of the user requires control of the external storage medium.

45. The display apparatus of claim 1, further comprising a housing which houses the receiving processor, the controller, and the output unit and which has an interface, wherein the external storage medium is external to the housing, and the controller controls the interface to transmit the received video signal and/or audio signal through the interface to the external storage medium to be stored.

46. The display apparatus of claim 45, wherein the interface is a Universal Serial Bus (USB) interface.

47. The display apparatus of claim 45, further comprising an external storage device including the external storage medium and another controller which controls storage and retrieval of data including the received video signal and/or audio signal with respect to the external storage medium, wherein the controller sends instructions through the interface to instruct the another controller to store the received video signal and/or audio signal on the external storage medium.

48. The display apparatus of claim 45, further comprising an external storage device includes the external storage medium, wherein the controller controls the storage of the received video signal and/or audio signal on the external storage medium through the interface.

49. A reproducing apparatus connected with a storage medium disposed external to the display apparatus, the apparatus comprising:

a receiving processor that receives a signal;

an output unit that outputs the signal; and

a controller that transmits the received signal from the reproducing apparatus to the external storage medium, stores the signal received through the receiving processor on the external storage medium, and controls the output unit to reproduce the received signal.

50. The reproducing apparatus of claim 49, wherein the controller further retrieves the stored signal from the external storage medium and controls the output unit to output the retrieved signal.

51. The reproducing apparatus of claim 49, wherein the controller further stores the received signal on the external storage medium as the signal is received so as to record the signal in real time.

52. The reproducing apparatus of claim 51, wherein the controller further outputs the received signal through the output unit in real time as the received signal is being stored.

53. The reproducing apparatus of claim 51, wherein the controller further retrieves the stored signal from the external storage medium and controls the output unit to output the retrieved signal.

54. The reproducing apparatus of claim 53, wherein the controller further outputs the received signal through the output unit in real time such that the received signal is output with the retrieved signal.

55. The reproducing apparatus of claim 49, further comprising a housing which houses the receiving processor, the controller, and the output unit and which has an interface, wherein the external storage medium is external to the housing and the received signal is transferred through the interface to the external storage medium to be stored.

56. The reproducing apparatus of claim 55, wherein the controller further controls the interface in order to transmit the received signal to and storage on the external storage medium.

57. The reproducing apparatus of claim 55, wherein the interface is a Universal Serial Bus (USB) interface.

58. The reproducing apparatus of claim 55, wherein:  
an external storage device includes another controller and the external storage medium,  
and

the controller sends instructions through the interface to instruct the another controller to store the received signal on the external storage medium.

59. The reproducing apparatus of claim 49, wherein:  
an external storage device includes the external storage medium, and  
the controller controls the storage of the received signal on the external storage medium.

60. The reproducing apparatus of claim 59, wherein the controller further creates a virtual file system so as to manage the received signal being recorded on the external storage medium.

61. The reproducing apparatus of claim 49, wherein the controller further generates a virtual file system so as to manage the received signal being recorded on the external storage medium.

62. The reproducing apparatus of claim 61, wherein the external storage medium stores additional signals, the generated virtual file system manages the stored signal and the additional signals, and the controller retrieves a selected one of the stored signal and the additional signals according to the virtual file system and controls the output unit to output the retrieved selected signal.

63. The reproducing apparatus of claim 60, wherein the controller further uses the generated virtual file system to retrieve the stored video and/or audio signal to be output through the output unit.

64. A controller for use in a reproducing apparatus which receives a signal and which is in communication with a storage medium disposed external to the reproducing apparatus, wherein the controller controls a transmission of the received signal to be stored on the external storage medium, controls a storage of the transmitted signal on the external storage medium, and controls an output unit of the reproducing apparatus to reproduce the received signal.

65. The controller of claim 64, wherein the controller further retrieves the stored signal from the external storage medium and controls the output unit to output the retrieved signal.

66. The controller of claim 64, wherein the controller further controls the received signal to be transmitted to and recorded on the external storage medium as the signal is received so as to record the signal on the external storage medium in real time.

67. The controller of claim 66, wherein the controller further controls the received signal to be output through the output unit in real time.

68. The controller of claim 66, wherein the controller further retrieves the stored signal from the external storage medium and controls the output unit to output the retrieved signal.

69. The controller of claim 68, wherein the controller further controls the received signal to be output through the output unit in real time such that the received signal is output with the retrieved signal.

70. The controller of claim 64, wherein the reproducing apparatus for use with the controller comprises a housing in which the controller is to be housed and has an interface, the external storage medium is external to the housing, and the controller controls the interface such that the received is transferred through the interface to the external storage medium to be stored.

71. The controller of claim 70, wherein the interface is a Universal Serial Bus (USB) interface.

72. The controller of claim 70, wherein:  
an external storage device includes another controller and the external storage medium, and  
the controller sends instructions through the interface to instruct the another controller to store the received audio signal on the external storage medium.

73. The controller of claim 64, wherein:  
an external storage device includes the external storage medium, and  
the controller controls the storage of the received signal on the external storage medium.

74. The controller of claim 73, wherein the controller further creates a virtual file system so as to manage the received signal being recorded on the external storage medium.

75. The controller of claim 64, wherein the controller further generates a virtual file system so as to manage the received signal being recorded on the external storage medium.

76. The controller of claim 75, wherein the external storage medium stores additional signals, the generated virtual file system manages the stored signal and the additional signals, and the controller retrieves a selected one of the stored signal and the additional signals according to the virtual file system and outputs the retrieved selected signal through the output unit.

77. The controller of claim 75, wherein the controller further uses the generated virtual file system to retrieve the stored signal to be output through the output unit.

78. A computer readable medium encoded with processing instructions for implementing a method of claim 30 performed by a processor.

79. A computer readable medium encoded with processing instructions for implementing a method of claim 41 performed by a processor.